

# UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	: 09/107,371	Patent No.	: 7,670,297
First Applicant	: John A. Hauck et al.	Issued	: 02 March 2010
Filed	: 30 June 1998	Confirmation No.	: 7909
Title	: Chamber mapping system		
Docket No.	: 0G-040005US/ 65513.0243		
Customer No.	: 67337		

**REQUEST FOR CERTIFICATE OF CORRECTION**  
**UNDER 37 C.F.R. § 1.323(a)**

ATTN: Certificate of Corrections Branch  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Applicants respectfully request a Certificate of Correction under 37 C.F.R. § 1.323(a) be entered in the above-identified patent. This request is being submitted to correct two errors in the issued patent referenced above, as set forth on the attached Certificate of Correction Form PTO/SB/44. The facts underlying this request are set forth below.

Applicants filed an amendment on 27 July 2009, copy of which is attached as Exhibit A.

Column 4, claim 4, line 19, kindly delete ~~[[hear]]~~ and replace with --heart--.

Column 4, claim 10, line 59, kindly delete `[[5]]` and replace with `--1--`.

Claims 4 and 10 should read as shown below:

4. A method of modeling a chamber of the heart in three-dimensions comprising:  
collecting a set of points inside the heart, each point having coordinates in three dimensional space;  
defining an interior direction and exterior direction for said raw data set; selecting a first point;  
selecting at least two neighbor points from said data set that are close and more exterior than said first point, said first point and said two neighbor points forming selected data;  
forming a polygon with said selected data;  
repeating said selecting steps and said forming step forming a computed convex hull shape from said raw data set;  
resampling said computed convex hull shape on a regular grid to generate an enlarged set of points;  
smoothing said convex hull shape forming a mathematically differentiable shape approximating the physiologic shape of the heart chamber from said enlarged set of points.

The Applicants respectfully solicit the Commissioner to grant this request for a Certificate of Correction addressing the error noted herein.

10. The method of claim 1 wherein said collecting step is carried out over more than one cardiac cycle to create an average cardiac cycle creating a composite average of a series of heart beats.

Application No. 09/107,371  
Patent No. 7,670,297  
Request for Certificate of Correction

The Applicants respectfully solicit the Commissioner to grant this request for a Certificate of Correction addressing the errors noted herein.

In accordance with 37 C.F.R. § 1.323, Applicants hereby authorize the Commissioner to charge Deposit Account No. 50-4385 (Attorney Docket No. 0G-040005US/65513.0243) for the Certificate of correction fee (\$100.00) as set forth in 37 C.F.R. 1.20(a). If there are any problems, please contact the undersigned attorney.

Respectfully submitted,

Dated: 06 February 2013

/James G. Rodgers #48306/  
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

App. No.: 09/107,371  
In re: John A. Hauck, et al. Art Unit: 3739  
Filed: 06/30/1998 Examiner: Cohen, Lee S.  
For: CHAMBER MAPPING SYSTEM  
Docket No.: 0G-040005US (065513-0243) Conf. No.: 7909

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

**AMENDMENT AND REPLY TO OFFICE ACTION**

Dear Commissioner:

In response to the Office Action of April 27, 2009, please amend the above-identified application as follows:

**Amendments to the Specification** begin on page 2 of this paper.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 3 of this paper.

**Remarks/Arguments** begin on page 6 of this paper.

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**CERTIFICATE OF TRANSMISSION VIA EFS-WEB**

I hereby certify that this paper is being transmitted to the United States Patent and Trademark Office via the Office's electronic filing system EFS-Web addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the 27<sup>th</sup> day of July, 2009.

/Koleen Pluta/  
Koleen Pluta

Exhibit A

App. No. 09/107,371  
Amendment dated 07/27/2009  
Reply to Office Action of 04/27/2009

**AMENDMENTS TO THE SPECIFICATION:**

Please delete the first paragraph of the specification starting with "Cross Reference to Related Applications . . ." and ending with ". . . now abandoned."

**AMENDMENTS TO THE CLAIMS:**

This listing will replace all prior versions and listings of claims in the application.

**LISTING OF CLAIMS:**

1. (Currently Amended) A method of modeling a chamber of the heart in three-dimensions comprising:
  - collecting a set of points inside the heart, each point having coordinates in three-dimensional space, forming a raw data set;
  - defining an interior direction and exterior direction for said raw data set;
  - selecting a first point;
  - selecting at least two neighbor points from said data set that are close and more exterior than said first point, said first point and said two neighbor points forming selected data;
  - forming a polygon with said selected data;
  - repeating said selecting steps and said forming step[[s]] forming a convex hull shape thus estimating the boundary of the heart from said raw data set.
2. (Currently Amended) A method of modeling a chamber of the hear in three-dimensions comprising:
  - collecting a set of points inside the heart, each point having coordinates in three dimensional space;
  - defining an interior direction and exterior direction for said raw data set;
  - selecting a first point;
  - selecting at least two neighbor points from said data set that are close and more exterior than said first point, said first point and said two neighbor points forming selected data;
  - forming a polygon with said selected data;
  - repeating said selecting steps and said forming step[[s]] forming a computed convex hull shape from said raw data set;

resampling said computed convex hull shape on a regular grid to generate an enlarged set of points;

smoothing said convex hull shape forming a mathematically differentiable shape approximating the physiologic shape of the heart chamber from said enlarged set of points.

3. (Currently Amended) The method of claim 2 wherein said collecting step further includes collecting ~~collection process collects~~ points at a set of times synchronized with the cardiac rhythm cycle, such that said points have physical coordinates in space at a specific time in the cardiac cycle.

4. (Currently Amended) The method of claim 3 wherein said ~~computing process calculates a step of repeating said selecting steps and said forming step forming a computed~~ convex hull shape is taken at discrete intervals in time corresponding to various stages of the heart cycle, generating a plurality of several hull shapes.

5. (Currently Amended) The method of claim 4 further comprising the step of sequentially comparing ~~3 wherein said collection of several hull shapes are sequentially compared~~ to develop a measurement of cardiac wall position.

6. (Currently Amended) The method of claim 4 further comprising the step of sequentially comparing ~~wherein said collection of several hull shapes are sequentially compared~~ to develop a measurement of cardiac wall velocity.

7. (Currently Amended) The method of claim 4 further comprising the step of sequentially comparing ~~wherein said collection of several hull shapes are sequentially compared~~ to develop a measurement of cardiac wall acceleration.

8. (Currently Amended) The method of claim 3 wherein said collecting step ~~collection process~~ is carried out over more than one cardiac cycle to create an average cardiac cycle creating a composite average of a series of heart beats.

9. (Previously Presented) The method of claim 8 wherein the composite average is measured periodically for a patient over the course of a therapy or treatment regime.

10. (Currently Amended) The method of claim 1 wherein said collecting step  
~~collection process~~ is carried out over more than one cardiac cycle to create an average cardiac  
cycle creating a composite average of a series of heart beats.

11. (Previously Presented) The method of claim 10 wherein the composite average is  
measured periodically for a patient over the course of a therapy or treatment regime.

### **REMARKS/ARGUMENTS**

This Amendment is submitted in response to the *non-final* Office Action mailed April 27, 2009 in connection with the above-identified application. Reconsideration of the above-identified application is respectfully requested in view of the foregoing amendments and following remarks.

#### **I. STATUS OF ACTION**

Claims 1-8 and 10 have been amended. Accordingly, claims 1-11 remain under consideration in this application.

#### **II. PRIORITY**

Applicants hereby withdraw the claim of benefit under 35 U.S.C. § 120. Amendment to the specification has been made reflecting the same.

#### **III. REJECTION UNDER 35 U.S.C. § 112**

Claims 1-11 stand rejected under 35 U.S.C. § 112, second paragraph. Applicants respectfully overcome the rejection through appropriate amendment. No new matter has been added.

#### **IV. INFORMATION DISCLOSURE STATEMENTS**

Applicants, their attorneys and assignees acknowledge the obligations set forth under 37 C.F.R. § 1.56 to disclose information in the manner prescribed by 37 C.F.R. §§ 1.97 – 1.98.

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### CONCLUSION

Reconsideration of the present application is respectfully requested. Applicants believe that the present application is in condition for allowance. Should the Examiner have any questions concerning the above, or if the Examiner feels that any issues may be expedited by a telephone interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below. The Commissioner is authorized to charge Deposit Account No. 04-2223 for any fees that may be due in connection with this response.

Respectfully submitted,

Date: July 27, 2009

By: /John W. Rees/  
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IDVWR - 065513/0243

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

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PATENT NO. : 7,670,297  
APPLICATION NO.: 09/107,371  
ISSUE DATE : 02 March 2010  
INVENTOR(S) : John A. Hauck et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 4, claim 4, line 19, kindly delete [[hear]] and replace with --heart--.

Column 4, claim 10, line 59, kindly delete [[5]] and replace with --1--.

### MAILING ADDRESS OF SENDER (Please do not use customer number below):

James G. Rodgers  
Legal Department  
St. Jude Medical, Atrial Fibrillation Division, Inc.  
One St. Jude Medical Drive  
St. Paul, MN 55117

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*